

CLAIMS

I/We claim:

- [c1] 1. A method for calibrating a visual display, the method comprising:
 - (a) analyzing a visual display module, the module comprising an array of data points;
 - (b) determining a color value and a brightness value for each data point;
 - (c) adjusting the color value and brightness value for each data point to correspond with a standard color value and a standard brightness value for a given color; and
 - (d) calibrating the visual display module with the adjusted data point values.
- [c2] 2. The method of claim 1, further comprising:
 - (e) setting the visual display module image to the color red;
 - (f) repeating steps (a) to (c); and
 - (g) repeating steps (e) and (f) with the visual display sign image set to green, blue, and white.
- [c3] 3. The method of claim 1 wherein the data points are light-emitting diodes.
- [c4] 4. The method of claim 1 wherein the process in step (b) for determining the color value and brightness value for each data point includes the use of a colorimeter.
- [c5] 5. The method of claim 1 wherein the color value of the data point is the chromaticity of the data point.

- [c6] 6. The method of claim 1 wherein the brightness value of the data point is the luminance of the data point.
- [c7] 7. The method of claim 1 wherein the process in step (d) for recalibrating the visual display module further comprises uploading the corrected data points to firmware and/or software controlling the visual display module.
- [c8] 8. The method of claim 1 wherein steps (a) to (d) take place within a test station.
- [c9] 9. The method of claim 1 wherein steps (a) to (d) take place in a darkroom.
- [c10] 10. A method for calibrating a visual display, the method comprising:
 (a) analyzing a portion of a visual display module, the portion comprising an array of data points;
 (b) determining a color value and a brightness value for each data point within the array;
 (c) storing the color value and brightness value for each data point;
 (d) repeating steps (a) to (c) for each portion of the visual display module until all portions of the visual display module have been analyzed;
 (e) after all of the data points have been read, calculating correction factors for each data point so that each data point will display the same color;
 (f) applying the correction factors to each stored data point; and
 (g) calibrating the visual display module with the corrected data points.
- [c11] 11. The method of claim 10, further comprising:
 (h) setting the visual display module to project the color red;

- (i) repeating steps (a) to (f); and
- (j) repeating steps (h) and (i) with the visual display module set to green, blue, and white.

[c12] 12. The method of claim 10 wherein the data points are light-emitting diodes.

[c13] 13. The method of claim 10 wherein the data points are pixels of a liquid crystal display (LCD).

[c14] 14. The method of claim 10 wherein the color value of the data point is the chromaticity of the data point.

[c15] 15. The method of claim 10 wherein the brightness value of the data point is the luminance of the data point.

[c16] 16. The method of claim 10 wherein the process in step (b) for determining the color value and brightness value for each data point includes the use of a colorimeter.

[c17] 17. The method of claim 10 wherein the process in step (c) for storing the color value and brightness value for each data point comprises storing the data in a database.

[c18] 18. The method of claim 10 wherein the process in step (e) for calculating correction factors for each data point includes processing the data using a computer and software.

- [c19] 19. The method of claim 10 wherein the process in step (g) for recalibrating the visual display module further comprises uploading the corrected data points to firmware and/or software controlling the visual display panel.
- [c20] 20. The method of claim 10 wherein steps (a) to (g) take place within a test station.
- [c21] 21. The method of claim 10 wherein steps (a) to (g) take place in a darkroom.
- [c22] 22. An apparatus for analyzing and calibrating a visual display, comprising:
means for capturing an image from a portion of the visual display module;
means for determining the color and brightness values for a plurality of data points from the captured image; and
means for adjusting the color and brightness values of each data point to correspond with a standard value of color and brightness for a given color.
- [c23] 23. The apparatus of claim 22 wherein the means for capturing the image comprises a CCD digital camera and lens.
- [c24] 24. The apparatus of claim 22 wherein the means for capturing the image comprises a CMOS digital camera and lens.
- [c25] 25. The apparatus of claim 22 wherein the means for determining the color and brightness values for a plurality of data points comprises software loaded in an interface, the interface being operably coupled to both the capturing means and the visual display sign.

[c26] 26. The apparatus of claim 22 wherein the means for adjusting the color and brightness values of each data point comprises calculating a set of correction factors to be applied and uploading the correction factors to the visual display module.

[c27] 27. The apparatus of claim 22 wherein the color value of each data point is the chromaticity of each data point.

[c28] 28. The apparatus of claim 22 wherein the brightness value of each data point is the luminance of each data point.